TITLE: **EXERCISE DEVICE AND SYSTEM**

FIELD OF THE INVENTION

This invention relates to the field of physical fitness, and in particular, the field of exercise devices for physical fitness.

BACKGROUND OF THE INVENTION

It has long been recognized that regular exercise lengthens life and improves health. Historically, health and physical fitness professionals emphasized cardiovascular exercise, believing that such exercise would, by itself, provide a full range of health benefits. However, it has now been found that strength training is also an important component of any comprehensive fitness program.

For many people who would like to exercise regularly, one of the biggest problems is finding adequate time to do so. The demands of work, family and social interaction often leave little time for exercising. For this reason, many people attend regularly scheduled fitness classes several times per week in an attempt to meet their exercise needs. Historically, such fitness classes were directed primarily toward cardiovascular fitness, with some attention paid to flexibility as well. However, with strength now being recognized as an important component of fitness, fitness classes need to be adapted to provide strength training.

A common method of strength training is the use of free weights and/or weight machines. However, this method is not well-suited for fitness classes which usually consist of a group of people spaced apart in a large room following the instructor's workout routine. It would be impractical to provide an adequate selection of weights to each person in such a setting.

Without a variety of weights available to each class participant, one possible approach is to concentrate for strength training on exercises that involve only unassisted movement of one's own body weight. These include, for example, sit-ups and leg lifts. However, it has been found that such exercises alone do not provide adequate strength training.

There have been attempts to provide convenient and useful devices which allow the performance of a wider variety of strength training exercises. For example, U.S. Patent No. 3,540,724 ("Hunter") discloses an exercising device. The device comprises seven different pieces which can be attached to one another in different ways to create a variety of different configurations. Each configuration provides the user with the ability to perform different exercises, some of which are directed to strength training. However, the Hunter device is too complex for use in fitness classes. In a fitness class, there is no time for the participants to take apart a device and reconfigure it into a new complex configuration every time it is desired to perform a new exercise.

U.S. Patent No. 4,258,915 ("Sellge") discloses a self-locking ballet barre to allow ballet exercises to be performed. The barre has a horizontal section that deforms substantially when force is applied to it, and uprights that are angled away from the horizontal. This configuration is stated to improve stability. However, the Sellge device is directed to ballet exercises rather than general strength training. Furthermore, the elements of the Sellge device, being thin and elastic, are not well-suited to exercises which put more stress and pressure on the device, and in which more of the user's weight needs to be carried by the device.

U.S. Patent No. 5,662,556 ("Gangloff") discloses a portable exercise bar device. The device is foldable. The device has a base extending through the space between two uprights, and a bar spaced from the base and extending between the two uprights. The Gangloff device is limited to use as a chin-up bar. Also, though intended for use as a chin-up bar, the base of the Gangloff device inconveniently interferes with the user's body during the performance of chin-ups.

U.S. Patent No. 5,169,362 ("Schwartz") discloses a device for use in a strength-aerobic exercise method. The device is a complex structure including a base, a U-shaped bar having an upper crossbar, a transverse bar closing off the bottom of the U-shaped bar and two handled horizontal bars extending outward from the U-shaped bar. The purpose of the device is to permit the user to do certain specific exercises, such as scissor-kicking, high-knee kicking and "rhythmic bipedal movements." This device is complex to manufacture, and has elements extending in various directions that could physically interfere with the performance of more conventional strength exercises.

SUMMARY OF THE INVENTION

Therefore, what is desired is an exercise system and device which is usable for a variety of strength training exercises, and preferably adapted for easy use in a fitness class environment, as well as personal training and home use. Preferably, the device will be configured to be suitable for use in performing exercises such as, for example, pull-ups and bicep curls. Also, preferably, the system will be adjustable so as to facilitate performance of exercises such as dips and pushups. Most preferably, the system will be configured to permit bio-mechanical adaptation, so that in the performance of a particular exercise, the user can adjust the system to permit the muscles being worked to be worked more fully, or to permit different muscles to be worked.

Therefore, according to one aspect of the invention, there is provided an exercise device comprising:

an elongate, substantially upright and substantially rigid weight-bearing portion for supporting the weight of a user during exercising, said weight bearing portion including a gripping portion extending across a top of said device, said weight bearing portion having an open bottom and generally lying in a first plane;

a pair of ground-engaging feet, one at either end of said weight-bearing portion, said feet extending outwardly from said plane to stabilize said upright

weight-bearing portion without interfering with said open bottom, the feet being spaced apart to permit the positioning of a user between the feet and be clear of interference from the feet;

the feet and weight-bearing portion being configured so that the mass of the device is generally balanced about said first plane;

wherein said user may grip said gripping portion clear of interference from the feet.

In another aspect of the invention, there is provided an exercise system comprising:

first and second exercise devices, each exercise device comprising an elongate upright weight-bearing portion for supporting the weight of a user during exercising, the weight-bearing portion including a gripping portion extending across a top of the exercise device, the weight-bearing portion generally lying in a first plane;

each exercise device further comprising a pair of ground-engaging feet, one at either end of the weight-bearing portion, the feet extending outwardly from the plane to stabilize the upright weight-bearing portion;

the first and second exercise devices being configured to be independently positionable relative to one another, wherein the angle and distance between the first and second exercise device can be adjusted by a user to permit the user to perform exercises involving the gripping with one hand of each gripping portion and the bearing of the user's weight by both weight-bearing portions simultaneously, the feet being configured to independently stabilize each weight-bearing portion independently during the exercises;

whereby the user can position the device for comfort, biomechanical adaptation and variation in exercise.

In another aspect of the invention, there is provided an exercise device comprising:

a body, the body comprising first and second feet sized, shaped and positioned to maintain the body in a standing position on a floor, and a weight-bearing portion connected between the first foot and the second foot, the weight-bearing portion and feet being sized, shaped and positioned so that the weight-bearing portion is spaced from the floor when the body is in a standing position on the floor;

the feet and weight-bearing portion being sized, shaped and positioned, and being composed of a material sufficiently strong, to permit a user to perform a pull-up exercise when the body is in a standing position, wherein the pull-up exercise comprises, from an initial substantially supine position on the floor between the feet and beneath the weight-bearing portion, substantially extending both arms generally vertically, grasping the weight-bearing portion with both hands, and bending the user's arms to pull the user's body off of the floor such that the user's weight is substantially borne by the weight-bearing portion, the feet and weight-bearing portion defining a space between the feet and below the weight-bearing portion, the space being free of obstructions that can contact the user in the supine position or interfere with the user's execution of the pull-up exercise by contacting the user;

the feet and weight bearing portion further being sized, shaped and positioned to permit a user to perform a one-arm bicep curl exercise, wherein the one-arm bicep curl exercise comprises the grasping of the weight-bearing portion substantially at its midpoint between the feet with one hand, with the user's corresponding arm substantially extended, and the bending of the corresponding arm so as to move the one hand to a position adjacent to the corresponding shoulder while the one hand grasps the weight-bearing portion, the feet and weight-bearing portion being sized, shaped and positioned such that, when the one hand is moved to a position adjacent the corresponding shoulder, the feet are moved to positions on opposite sides of the user's body so that the user's body is positioned between the feet, the space being free of obstructions that can

contact the user's body when the one hand is moved to a position adjacent the corresponding shoulder.

In another aspect of the invention, there is provided an exercise device comprising:

a body, the body comprising first and second feet sized, shaped and positioned to maintain the body in a standing position on a floor, and a weight-bearing portion connected between the first foot and the second foot, the weight-bearing portion and feet being sized, shaped and positioned so that the weight-bearing portion is spaced from the floor when the body is in a standing position on the floor;

the feet and weight-bearing portion being sized, shaped and positioned, and being composed of a material sufficiently strong, to permit a user to perform a pull-up exercise when the one-piece body is in a standing position, wherein the pull-up exercise comprises, from an initial substantially supine position on the floor between the feet and beneath the weight-bearing portion, substantially extending both arms generally vertically, grasping the weight-bearing portion with both hands, and bending the user's arms to pull the user's body off of the floor such that the user's weight is substantially borne by the weight-bearing portion, the feet and weight-bearing portion defining a space between the feet and below the weight-bearing portion, the space being free of obstructions that can contact the user in the supine position or interfere with the user's execution of the pull-up exercise by contacting the user;

the feet and weight-bearing portion further being sized, shaped and positioned to permit a user to perform a two-arm bicep curl exercise, wherein the two-arm bicep curl exercise comprises the grasping of the weight-bearing portion with two hands, with the user's arms substantially extended in front of the user, and the bending of the arms so as to move the hands to positions adjacent to the user's shoulders while the hands grasp the weight-bearing portion, the feet and weight-bearing portion being sized, shaped and positioned such that, when the

hands are moved to a position adjacent the shoulders, the feet are moved to positions on opposite sides of the user's body so that the user's body is positioned between the feet, the space being free of obstructions that can contact the user's body when the hands are moved to a position adjacent the corresponding shoulder.

In another aspect of the invention, there is provided an exercise system comprising:

two separate and independently positionable exercise devices, each exercise device comprising a body, the body comprising first and second feet sized, shaped and positioned to maintain the body in a standing position on a floor, and a weight-bearing portion connected between the first foot and the second foot, the weight-bearing portion and feet being sized, shaped and positioned so that the weight-bearing portion is spaced from the floor when the body is in a standing position on the floor, the body having a weight sufficiently low to permit the body to be lifted and moved along the floor by a user;

the devices being positionable, and the feet and weight-bearing portions being sized, shaped and positioned, and composed of a sufficiently strong material, to permit a user to perform a push-up exercise, wherein the push-up exercise comprises placing one hand on each weight bearing portion with arms bent, and with body extended away from the weight-bearing portions and the feet on the floor, so that the body is oriented face down and at an angle to the floor between the vertical and the horizontal and so that the user's weight is substantially borne by the weight-bearing portion, the push-up exercise further comprising straightening the arm so as to push the user's body up and away from the weight-bearing portions, the weight-bearing portion and feet being sized, shaped and positioned so as to provide a push-up motion space where the user's body can be positioned and can move in execution of the push-up exercise without interference;

the devices being positionable, and the feet and weight-bear portions sized, shaped and positioned, and being comprised of a sufficiently strong material, to permit the user to perform a dip exercise, wherein the dip exercise comprises the user being positioned between the devices, placing one hand on each weight-bearing portion, supporting the user's weight on the weight-bearing portions, bending the arms to lower the user's body and then straightening the arms to raise the user's body, the weight-bearing portion being sized, shaped and positioned to permit the user to press his feet against the floor to assist in the step of raising his body when his arms are too fatigued to permit unassisted raising of the user's body with the arms, the weight-bearing portions and feet being sized, shaped and positioned so as to provide a dip motion space where the user's body can be positioned and can be moved in execution of the dip exercise without interference;

each exercise device further comprising at least one anti-slide device associated with each foot and positioned to inhibit the sliding of the body when the body is in use in a standing position.

BRIEF DESCRIPTION OF THE DRAWINGS

To facilitate a better understanding of the invention, a preferred embodiment will now be described with reference to the drawings, in which:

Figure 1 is a perspective view of the exercise device according to the present invention;

Figure 2 is an elevation view of the exercise device according to the present invention;

Figure 3 is a top plan view of the exercise device according to the present invention;

Figure 4 is a cross-sectional view taken along line 4-4 of Figure 1;

Figure 5 shows the device being used for a pull-up exercise;

Figure 6 shows the system being used for an abdominal exercise;

Figure 7 shows the device being used for a bicep curl exercise;

Figure 8 shows the system being used for a dip exercise;

Figure 9 shows the system being used for a dip exercise;

Figure 10 shows the system being used for a one-leg pull up exercise;

Figure 11 shows the system being used for a one-leg pushup exercise;

Figure 12 shows the device being used for an overhead tricep extension exercise;

Figure 13 shows the system being used for a pull up exercise;

Figure 14 shows the system being used for a push up exercise;

Figure 15 shows the system being used for a side lateral exercise;

Figure 16 is a top view of two devices stored in a nested configuration; and

Figure 17 is a perspective view of the exercise device according to the present invention, the device including removable weights.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to Figure 1, the preferred exercise device 10 is shown. The exercise device 10 comprises a weight-bearing portion 12 for supporting the weight of a user during exercising and a pair of ground engaging feet 16, one at either end of the weight bearing portion 12. The feet 16 are preferably configured to rest on a floor but not be attached thereto. The weight bearing portion 12 preferably comprises first and second generally upstanding sections 18 which extend from each of the feet 16. The weight bearing portion 12 preferably further comprises a generally horizontal transverse section 20 which extends between the upstanding sections 18, and which includes the gripping portion 14 extending across the top of the device 10.

In the preferred embodiment, the weight bearing portion 12 is comprised of elongate hollow metal tubing, with the metal tubing preferably comprising 1.5 inch diameter, 16-gauge tubing. The metal tubing is preferably comprised of steel. This configuration for the hollow metal tubing is preferred for a number of reasons.

First, hollow steel tubing is relatively inexpensive, and its use for the weight bearing portion 12 allows the device to be manufactured at a reasonable cost. Second, the purpose of the portion 12 is to bear the user's weight, and the use of steel, and 16-gauge steel tubing in particular, makes the portion 12 strong enough to support or bear the weight of users. Third, it is preferred that the device 10 be usable for weight-lifting exercises such as bicep curls. It has been found that when the portion 12 is composed of 16-gauge 1.5 inch hollow steel tubing, the device 10 is light enough to be used for most weight lifting exercises while being heavy enough to provide a strength training benefit. Fourth, the gripping portion is preferably configured to be easily and comfortably gripped. It has been found 1.5 inch diameter tubing is small enough to permit a comfortable grip.

Preferably, the weight bearing portion 12, and in particular, the gripping portion 14, is substantially round in cross section, as shown in Figure 4. It will be appreciated that a round cross section is preferred for the gripping portion 14 because such a cross sectional shape contains no edges, and is therefore easy and comfortable for the user to grip. In addition, a weight bearing portion 12 having a round cross section (and composed, for example, of hollow metal tubing) is relatively simple and inexpensive to manufacture.

While this form of weight bearing portion 12 is preferred, it will be appreciated that other forms of weight-bearing portion are comprehended by the invention. What is important is that the weight-bearing portion be adapted to bear the weight of a user, and that it include a gripping portion 14 for the weight-bearing portion 12 to be gripped.

The weight bearing portion 12 is preferably configured so as to be substantially upright when the device 10 is in its standing position. Also, preferably, the weight bearing portion 12 generally lies in a plane, i.e. in the preferred embodiment, the generally upstanding sections 18 and transverse section 20 preferably lie generally in a single plane. In the preferred embodiment, the feet 16 extend outwardly from the plane to stabilize the upright weight bearing

portion 12, most preferably at an angle of 90° to the plane.

Also, the feet 16 and weight bearing portion 12 are preferably configured so that the mass of the device 10 is generally balanced about the plane. This is preferred for two reasons. First, the device 10 is preferably used for weight-lifting exercises, such as bicep curls, which involve gripping the gripping portion 14 and lifting the device 10 off of the floor. In configurations where the mass of the device 10 is not balanced about the plane, the orientation of the device 10 will tend to shift suddenly when the device 10 is lifted, in response to the force of gravity and the eccentric centre of mass of the device 10. This sudden shift makes the lifting of the device less comfortable for the user and may place undue strain on the wrist or hand of the user. By contrast, this sudden shift upon lifting is reduced or eliminated when the mass of the device 10 is generally balanced about the plane. The preferred device 10 is thus configured to facilitate stable lifting of the device 10 without a sudden shift in the position of the device 10. The resulting strain on the user's wrists and hands is thus reduced or eliminated.

Second, as will be discussed further below, the device 10, alone or as part of the system 9, is preferably usable for exercises that require the device 10 to remain in a standing position on the floor while bearing the user's weight. These exercises include, for example, dips, push-ups and pull-ups. For a user to perform these exercises properly using the preferred device 10, the device 10 must be stabilized adequately so as to remain standing even when bearing the user's weight. With some exercises, such as push-ups, the user will typically apply a force to the weight-bearing portion 12, which force has a horizontal vector component. This horizontal vector component urges the device 10 out of its standing position and must be counteracted in part by the feet 16 which extend outward from the plane. When the mass is unbalanced about the plane, the device 10 will be more likely to topple if the horizontal force is applied from the "lighter" side of the plane than from the "heavier" side. When the mass of the device 10 is balanced about the plane, the device is equally resistant to toppling, regardless

of which side of the plane the horizontal force is applied from. The balanced configuration is thus preferred because the user may position himself on either side of the plane while performing exercises without affecting the stability of the device 10.

As shown in Figure 1, the weight bearing portion 12 has an open bottom, designated by reference numeral 22 and described more particularly below. The feet 16 are therefore preferably configured to extend outwardly from the plane to stabilize the weight bearing portion without interfering with the open bottom 22. Most preferably, the feet 16 comprise 1.5 inch diameter, 16-gauge hollow metal tubing in the form of elongate portions oriented substantially perpendicular to the plane. This configuration of the feet 16 is preferred because the use of the same type of hollow metal tubing for both feet 16 and portion 12 makes the manufacture of the device 10 both simpler and less expensive. Furthermore, it has been found that hollow metal tubing is a material sufficiently strong to resist breaking or bending when the feet 16 are subjected to stress during the performance of exercises. It will be appreciated, however, that other configurations for the feet 16 are comprehended by the invention.

It will be appreciated that one of the preferred functions for the device 10 is its use for performing pull-ups. To perform the pull-ups, the user would preferably position himself between the feet 16, so that he is lying between the feet 16. The feet 16 are spaced apart so that the user can be positioned between the feet 16 and grip the gripping portion 14 clear of interference from the feet 16. The user's upper body is typically positioned under the portion 12 and between the feet 16, with the user's torso and legs extending outward along the floor in a direction generally perpendicular to the plane. To perform the pull-up exercise, the user then reaches up with his arms, grips the gripping portion 14, and pulls his body weight upward by pulling the portion 14, so that the weight bearing portion 12 supports the weight of the user. The weight-bearing portion 12 has an open bottom 22, meaning that the portion 12, feet 16 and device 10 are configured so that there is no

obstruction between the feet 16, or between the floor and the portion 12, that interferes with the positioning of the user below the weight-bearing portion 12, or that interferes with the user pulling his body off of the floor to perform a pull-up. Because the weight bearing portion 12 has an open bottom 22, a user can position himself under the weight bearing portion 12 as just described, and perform pull-ups as just described, without interference from the device 10.

This preferred configuration is in contrast to configurations in which the device interferes between the feet 16, or in the space between the weight-bearing portion 12 and the floor, or in the space, between the feet 16 and extending outward from the plane, where the user's body is positioned for pull-ups. In the preferred open bottom configuration, the user can position himself for pull-ups, with his body extending from the plane in either direction, without interference.

Figure 5 shows a user performing pull-ups using a single device 10. As described above, the preferred form of pull-up for the device 10 is a pull-up in which the user's lower body extends outward from the plane along the floor. When the user pulls himself up by pulling on the gripping portion 14, the user's feet remain on the floor, so the user's weight is supported primarily by the portion 12 but partly by the user's own feet. Thus, the height of the gripping portion preferably has a height selected to permit the user to grip the portion 14 with his lower body positioned along the floor as described above. This configuration is preferred for at least three reasons. First, many, if not most, users are unable to perform a pull-up exercise in which all of their weight is pulled off of the ground from a standing position. The preferred configuration allows the performance of a pull-up where the user is not pulling all of his weight off of the ground. Second, an apparatus for performing ordinary standing pull-ups is too large and cumbersome for a fitness class environment, which is the preferred use for the device 10. Third, in the preferred device, the lower height of the gripping portion 14 makes the device 10 useful for a greater variety of strength training exercises, as will be more particularly described below.

Another aspect of the invention is shown in Figures 6, 8, 9, 10, 11, 13, 14 and 15. These figures show an exercise system 9 comprising first and second exercise devices 10. The exercise devices 10 are configured to be independently positionable relative to one another, most preferably by being unconnected to one another. The devices 10 being entirely separate from one another is preferred because such a configuration has been found to be most flexible i.e. most useful for the widest variety of exercises and most adaptable to the needs of different users. Furthermore, such a system 9 is simplest to manufacture, because the devices 10 can be built separately without any additional steps being necessary to manufacture the system 9. However, it will be appreciated that other less preferred configurations of the system 9 are comprehended by the invention. For example, the devices 10 of the system 9 could be connected by a rope or chain. What is important is that the devices 10 be independently positionable.

As the devices 10 are independently positionable, a user can adjust the distance and angle between the first and second exercise devices 10, so that the user can perform exercises which require the user to grip the gripping portion 14 of each of the two devices 10 and support some or all of his weight on both weight bearing portions 12 simultaneously. Meanwhile, the ground engaging feet 16 of each device 10 are configured to independently stabilize each weight bearing portion 12 while exercises are being performed using the system 9.

Figure 6 shows the use of the system 9 for the performance of a lower abdominal exercise. The devices 10 are positioned on opposite sides of the user's body. The user, with his arms at his sides, grips each gripping portion 14 with one hand. He then supports his weight on the weight bearing portions 12 with his upper body in a generally vertical orientation, lifting his knees towards his chest. He then lowers his knees and repeats the movement to work his abdominal muscles.

Figure 7 shows the device 10 being used in the performance of a bicep curl exercise. To perform a bicep curl, the user stands and grips the gripping portion

14 of the device 10 with two hands as shown in Figure 7, or alternatively, with one hand. With a two-handed bicep curl, both the users arms are then bent and the gripping portion 14 brought toward the user's shoulders. It will be appreciated that as the bicep curl exercise is performed and the portion 14 moved upward, each foot 16 moves to a position beside the user's body, so that the user's body is positioned between the feet 16. It will be appreciated that the open bottom 22 of the weight bearing portion 12 facilitates the use of the device 10 for bicep curls. Because the device 10 has an open bottom 22, the user is able to approach the device 10 from either side of the weight bearing portion 12, grip the gripping portion 14, and perform a bicep curl. Without an open bottom, the bicep curl exercise would be more difficult to complete, as the lack of an open bottom would cause the device 10 to strike the user's body as the gripping portion is raised before the full curling motion is completed.

Figure 8 shows a user using the system 9 to perform a dip exercise. A dip exercise is performed by the user positioning himself or herself between two devices 10. Preferably, the devices 10 are oriented so that the planes of the weight bearing portions 12 are parallel, the user is positioned between them, and each plane extends forward and backward to the regions in front of and behind the user. The user then grips the devices 10, with one hand gripping each gripping portion 14. The user then lifts his feet off of the floor and supports his weight through his arms on the weight bearing portions 12. To complete the dip exercise, the user bends his arms, thus lowering his body towards the floor. Once the user's elbows are bent approximately 90°, the user then straightens his arms, lifting his body away from the floor. Figure 9 also shows a user performing a dip exercise.

Those skilled in the art will appreciate that dips are typically performed with the user's arms supporting the user's entire weight during the exercise. However, the height of the gripping portion 14 is preferably selected so that the user is able to place his feet on the floor during the dip exercise if desired. If the user does not wish to do so, he can bend his knees to keep his feet off of the floor.

Having the gripping portion at this selected height has two results. First, a user unable to perform typical dips can still work the same muscles by performing the dip exercise while supporting his weight with his feet. Second, a user who can perform typical dips can do so until the relevant muscles have fully fatigued. Then, he can support a small portion of his weight with his feet and resume the dip exercise until the muscles are fully fatigued. The user can then support more of his weight with his feet and perform the exercise until the muscles are fully fatigued. The user then continues progressively reducing the load on the muscles for each set. Thus, the gripping portion 14 is positioned to permit the user to perform multiple sets of dips at variable or dropping resistance, which more fully fatigues the relevant muscles and provides a more thorough workout to those muscles.

Figure 10 shows a user performing a two-bar one-leg pull-up exercise. Figure 13 shows the same exercise being performed with the both legs touching the ground. This exercise is performed with the system 9, which comprises two devices 10. To perform this exercise, the user positions herself on the floor, between the two devices 10. The devices 10 are oriented generally in a V-shape in top view. The user is positioned between the two devices 10, with her head being positioned near the point of the V, and her legs extending outward past the open end of the V. To perform the exercise, the user reaches up and grips each gripping portion 14 with one hand. The user of Figure 10 keeps one foot on the floor, while keeping the other leg raised off of the floor. The user of Figure 13 keeps both feet on the floor. To complete the exercise, the user pulls her body off of the floor by bending her arms, causing the weight bearing portions 12 to bear her weight. Her weight is also borne in part by the one foot (or both feet) that remain(s) on the floor during the exercise. The exercise is performed with the user's body remaining generally straight. The second half of the exercise is performed by the user straightening her arms, thus lowering her body towards the floor.

It will be appreciated that this exercise is facilitated in part by the independently positionable nature of the two devices 10. Specifically, the user is able to perform this exercise by positioning the devices 10 roughly in a V-shape. Thus, at the point where the user grips the gripping portion 14, the gripping portions 14 are sufficiently close to allow the user to grip one in each hand. However, at the open end of the V-shape, the ends of the devices 10 are spread further apart, giving the user's body space to extend outward.

By contrast, to perform a dip exercise as shown in Figure 9, it is preferable to orient the planes of the weight bearing portions 12 in a generally parallel, rather than V-shaped, configuration. This allows for a comfortable angle for the user to grip the gripping portions 14. Thus, it will be appreciated that the user's ability to independently position the devices 10 within the system 9, so as to permit the angle between the devices 10 to be adjusted, gives the system 9 flexibility in facilitating the performance of a variety of exercises.

In addition, it will be appreciated that the devices 10 are independently positionable so as to allow the distance between the devices 10 to be adjusted. For example, in performing the dip exercise shown in Figure 8, the devices 10 are positioned on either side of the user. Preferably, the position of the devices 10 is adjusted so as to permit the user to comfortably grip the gripping portions 14 on either side of his body. Thus, the distance between the devices 10 can be adjusted to account for the width of a particular user's body. If the user's body is wide, the devices 10, which are independently positionable, can be positioned at a greater distance from one another. If the user's body is narrow, the devices 10 can be positioned at a nearer distance to one another.

Figures 11 and 14 show the user performing a pushup exercise. In Figure 11, the user keeps only one foot on the floor while performing the pushup, while in Figure 14, both feet remain on the floor during the pushup exercise. To perform the pushup exercise, the user places one or both feet on the floor. The user's body is inclined upward from the horizontal, and the hands of the user grip the gripping

portions 14, so that one hand grips each gripping portion 14. The user's upper body is positioned above the gripping portions 14. The user first bends his arms to bring his body downward towards the floor, and straightens his arms, thus pushing his weight upward against the weight bearing portions 12 to raise his body away from the floor.

It will be appreciated that the independent positionability of the devices 10 facilitates the comfortable completion of the pushup exercise. For example, as shown in Figure 11, the devices 10 are positioned in a V-shape. This provides a particular angle of grip for the user gripping the gripping portions 14. In Figure 14, the devices 10 are positioned at an angle closer to parallel, providing a different grip angle for the user. Thus, because the devices 10 are independently positionable so as to allow the angle and distance between them to be adjusted, the user can adjust the position of the devices 10 to permit the most comfortable grip for that user. The independent positionability of the devices 10 thus has an ergonomic benefit in the performance of exercises with the system 9.

In addition, it will be appreciated that the performance of individual exercises can be adjusted to work different muscle groups to different degrees. For example, in performing pushups, the hands can be positioned further apart or closer together depending on which muscles the user prefers to work. If the user's hands are closer together, the triceps are worked harder. If the hands are further apart during the pushup exercise, then the pectoralis major and minor muscles, as well as the anterior deltoid muscle, are worked more. Thus, the system 9 and devices 10, by being independently positionable, are configured to permit biomechanical adaptation by the user, so he can work muscles of his choice. This increases the flexibility of the system 9 for the user.

The height of the gripping portion 14 from the floor is preferably selected to permit the user to perform multiple sets of push-ups at variable or dropping resistance, thus more thoroughly working the relevant muscles. To do this, the user progressively increases for each set the acute angle between his body and the

floor, thus progressively decreasing the load for each set.

Figure 12 shows the user performing a overhead tricep extension exercise with a single device 10. The exercise begins with the user gripping the gripping portion 14 with both hands. The user's hands are positioned behind his head, and the device 10 is positioned behind the user. The user's arms are initially bent. To perform the exercise, the user straightens his arms, moving his hands upward above his head, so that the triceps are worked as the device 10 is lifted away from the floor. The user then returns his hands to the initial position.

It will be appreciated that the device 10 will preferably have an open bottom 22, and the feet 16 are preferably spaced apart sufficiently to permit the user to be positioned between the feet 16 in the open bottom 22. In performing the tricep extension, the user extends his arms upward, and as he does so, the feet 16 of the device 10 naturally move to opposite sides of the user's body, so that the user is positioned in the open bottom 22 of the weight bearing portion 12. If the weight bearing portion 12 had a closed bottom, or if the feet 16 were not sufficiently spread apart to permit the user to be positioned between them, the device 10 would strike the user as he performed the exercise, thus interfering with comfortable completion of the exercise.

Figure 15 shows a user performing a side lateral raise exercise using the system 9. To perform the exercise, the user stands between two devices 10. Each device 10 is located to the side (rather than the front or back) of the user who grasps with each hand a gripping portion 14. With arms substantially straight and out to the sides of his body, the user lifts the devices 10 from the ground, keeping his arms substantially straight. This exercise works the anterior deltoid and trapezius muscles.

It will be appreciated that the device 10, and system 9, are preferably configured so as to permit the execution of a substantial variety of exercises. These include, for example, exercises such as pull-ups, push-ups and dips. Thus, it is preferred that the weight bearing portion 12 be substantially rigid, i.e. that the

weight bearing portion not yield sufficiently to be perceptible to the user when the user uses the device 10 for exercises as pushups, pull-ups and dips. Performing these exercises in the most preferred way requires that the weight of the user be borne in a stable manner by the weight bearing portion 12. If the weight bearing portion 12 yields perceptibly in response to the user's weight, then the user may lose his grip on the gripping portion 14, or sprain or otherwise injure his wrists in trying to maintain his grip. Even if such drastic consequences do not occur, the device 10 will feel less stable to the user. By contrast, if the weight bearing portion 12 is substantially rigid as preferred, then the user will feel more confident and stable in using the device 10, and will be less prone to injury.

Preferably, both the feet 16 and weight bearing portion 12 are configured such that the height of the gripping portion 14 is fixed and the distance between the feet 16 is fixed. This structure is preferred because it is simpler and less expensive to manufacture. A device 10 having adjustable height and width would require multiple pieces which fit together with one another in a complex manner. It will be appreciated, however, that an adjustable structure, though not preferred, is still comprehended by the invention.

It will further be appreciated that the height and width of the device 10 are preferably selected so as to permit the comfortable and easy execution of exercises such as push-ups, pull-ups and dips using the device 10 and the system 9. For example, the space between the generally upstanding sections 18 and/or between the feet 16 is preferably selected so that a typical user can position himself between the feet 16 and perform a pull up exercise as shown in Figure 5. Similarly, the height of the gripping portion 14 is preferably selected so as to permit such a user to reach, and comfortably and easily grip, the gripping portion 14.

It has been found that the distance D_1 between the outer edges of upstanding sections 18 and between the feet 16 should preferably be more than about 16 inches and less than about 40 inches. Most preferably, the distance

between the upstanding sections 18 and between the feet 16 will be about 25 inches. The distance D_2 between the inner portions of the sections 18 is preferably between about 13 inches and about 37 inches, and most preferably about 22 inches and about 37 inches, and most preferably about 22 inches. These dimensions have been found to facilitate the performance of pull-ups by permitting a user to position himself between the feet 16, while keeping the device 10 small enough to allow it to be easily manipulated and moved around in a fitness class setting for use with various exercises. This width has also been found to provide sufficient stability so that the device generally will not topple during regular use by rotating within the plane.

Similarly, it has been found that the transverse section 20 and generally upstanding sections 18 should preferably be sized, shaped and positioned so that the top of the gripping portion 14 is positioned at a height H_2 of between about 15 and about 42 inches above the floor when the device 10 is in a standing position. It has been found that, most preferably, the height of the gripping portion will be about 27 inches above the floor. Preferably, the lower end of the gripping portion 14 is positioned at a height H_2 of between about 13.5 inches and about 40.5 inches above the floor. Most preferably, the height H_2 is about 25.5 inches. These dimensions have been found to facilitate the performance of pull-ups by permitting a user to reach up from his position on the floor between the feet 16 and grip the gripping portion 14 as shown in Figures 5, 10 and 13. At the same time, this height is low enough to permit the typical user to position his upper body above the gripping portion 14 and perform a push-up exercise as shown in Figures 11 and 14. At the same time, this height is neither to high nor too low for the user to grip the gripping portions 14 and comfortably perform a dip exercise as shown in Figures 8 and 9.

It will be appreciated that the preferred device 10 and system 9 should be usable for exercises that require the repeated movement of the device 10. Examples of such exercises are bicep curls, tricep extensions and side lateral

raises. Preferably the device 10 will be light enough for a user to lift safely and comfortably, while being heavy enough to provide a strength training benefit when lifted. It has been found that the weight of the device should preferably be between 5 pounds and 15, and most preferably about 8 pounds. Thus, the portion 12, feet 16 and caps 24 (described below) are preferably configured so that the device 10 weighs between five and fifteen pounds, and are most preferably configured so that the device 10 weighs about eight pounds.

Preferably, each foot 16 has at least one anti-slide device associated therewith, and positioned to inhibit the sliding of the device along the floor when the device is in use and in a standing position. Most preferably, each foot 16 comprises an elongate element having two ends, and the anti-slide device comprises two anti-slide elements, one positioned at each end of the foot 16. Most preferably, the anti-slide elements take the form of rubber caps 24 positioned over the each end of each foot 16. This configuration is preferred because the caps 24 are effective yet simple and inexpensive to manufacture. However, other, less preferred configurations for the anti-slide elements are comprehended by the invention. For example, threaded anti-slide pads 26 are shown in Figure 7. This form of anti-slide element has the additional function of allowing height adjustment of the pads 26. However, use of the pads 26 as anti-slide elements has been found to be unnecessarily complex, requiring that the pads 26 be screwed into holes in the feet 16. In addition, it has been found that the caps 24 are less expensive than the pads 26, and are more robust and less susceptible to breakage and wear-and-tear than pads 26.

It will be appreciated that the preferred structure of the device 10, and in particular, the size, shape and position of the feet 16 and weight bearing portion 12, permit the devices 10 to be stored in a nested configuration, as shown in Figure 16. Specifically, the devices 10 can be stored in a standing position, with the weight bearing portions 12 of devices 10 positioned immediately adjacent and parallel to one another. The feet 16 of one device 10, which feet are in the

preferred embodiment orthogonal to the plane of the weight-bearing portion 12, are also directly adjacent to and parallel to the feet 16 of the other device.

It will be appreciated that it is preferred for the device 10 to be configured so as to be capable of being stored in a nested configuration. The devices 10 may be used in fitness classes. As such, for any particular class, many devices 10 may be required, depending on the number of participants. Thus, it is preferred if the amount of storage space required for the devices 10 is minimized. The ability for the devices 10 to be stored in a nested configuration reduces the amount of storage needed for the devices 10 as compared with the amount that would be needed if a nested storage configuration were not available.

Preferably, as shown in Figure 17, the device 10 further comprises removable weights 30 which are removably attachable to the device 10, preferably at the weight-bearing portion 12. Preferably, the removable weights 30 are in the form of elongate, weighted, bands having Velcro™ portions 32 at the ends of the bands to permit the weights 30 to be wrapped around the portion 12 and thus secured thereto. The preferred location for attaching the weights 30 is on the portion 12 just above each foot 16, so that the foot 16 keeps the weights 30 on the portion 12, as shown in Figure 17. The preferred weights 30 are filled with sand or the like for weight. It will be appreciated that, for larger or stronger users in particular, it may be desirable for the device 10 to be made heavier so that the performance of exercises such as tricep extensions and bicep curls provide a greater strength training benefit.

The weights 30 may be of different weight levels, such as 1 pound, two pounds, 5 pounds or 10 pounds. Preferably, the device 10 comprises an even number of weights 30 so that the extra weight added by the weights 30 is distributed evenly on opposite sides of the portion 12. The even distribution of weight makes exercises such as bicep curls and tricep extensions easier and more comfortable to perform.

While the foregoing embodiments of the present invention have been set forth in considerable detail for the purpose of making a complete disclosure of the invention, it will be apparent to those skilled in the art that various modifications can be made to the device without departing from the broad scope of the invention as defined in the attached claims. Some of these variations are discussed above and others will be apparent to those skilled in the art. For example, the weight-bearing portion 12 may be made of plastic rather than metal, or may be made of a metal other than steel, or may be made out of some other material, and need not be hollow. What is considered important in the present invention is to provide an exercise system and device for use in strength training exercises, which device and system are practical for fitness class use, as well as personal training and home use.